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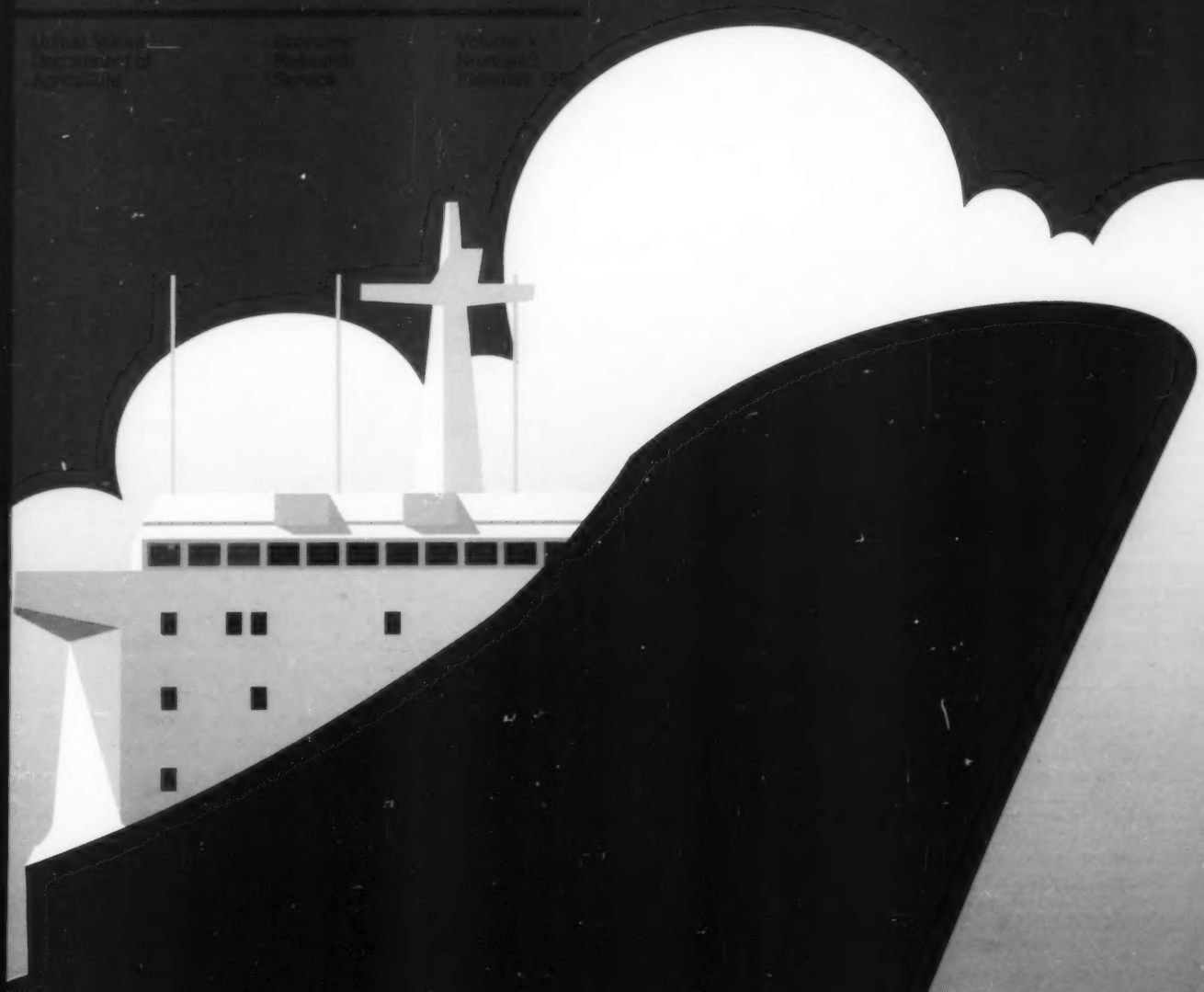

Korea Becomes Second-Largest U.S. Export Market

Low-Input Farming: Does It Pay?
page 12

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PERSPECTIVES

FORWARD CONTRACTING protects farmers from falling prices. But if prices go up, as occurred during last year's drought, contracts can prevent producers from receiving the higher prices. And when production is reduced by drought, a farmer might not be able to deliver the commodity as called for in a contract. This also can create serious problems for elevators holding contracts.

Problems involving forward contracts in 1988 were not as severe as expected, however, according to economist Bruce Wright of USDA's Economic Research Service.

Elevator operators in 13 Corn Belt and spring wheat states, surveyed last fall, said that farmers had defaulted or were likely to default on less than 1% of their contracts, Wright says. He adds that more than 95% of the outstanding contracts were expected to be fulfilled as originally negotiated. And only about 1% of the elevators expected that losses from farmers failing to meet contract commitments would exceed 10% of the elevator's net worth.

More than half the elevators had forward contracts with farmers for corn, soybeans, or wheat produced in 1988. The contracts covered about 15% of the corn, 22% of the soybeans, and 7% of the spring wheat purchased by the elevators.

Prices in corn forward contracts signed in late spring were generally $2 a bushel or lower. By late June prices had increased by as much as $1.50 per bushel. Elevators faced potential losses from defaulted contracts, because in many cases they had hedged their purchases on the futures market or had already contracted for the sale of the commodities they were planning to buy from the producers. And elevators also sometimes confronted sizable margin calls on hedged commodities as prices rose, Wright says. He offers several reasons why the financial problems for the elevators turned out to be far less than first feared.

The drought began early in the growing season. Contracting usually increases just after planting and continues through the summer as yields become more certain. But last year, as the drought intensified, forward contracting dropped off sharply.

Farmers usually forward contract only a portion of their crop, and often in increments. Many producers last year ended up contracting no more than 10-20% of their normal crop. Also, late rainfall in some areas boosted yields enough to enable farmers to meet their contract obligations.

Elevator operators said they had renegotiated or expected to renegotiate less than 2% of their contracts. About 90% of the contracts renegotiated were expected to be settled by the farmer paying the elevator the full difference between the current price and the contracted price, plus a service charge (typically 5-15 cents per bushel). A few renegotiations involved deferring delivery until the 1989 crop is harvested.

* * * * *

It's not too late to order Outlook '89 Charts and Outlook '89 Proceedings from the 1989 USDA Agricultural Outlook Conference, which was held in late 1988. The proceedings--a full set of the conference speeches--costs $18 ($22 to non-U.S. addresses). The collection of about 150 charts and data tables used by conference speakers is $3 ($3.75 to non-U.S. addresses). To order either report, send a check or money order, payable to EMS/USDA, to: Outlook '89, Room 228-USDA, 1301 New York Ave. NW, Washington, DC 20005-4789. Specify the title you are ordering and print your name, address, and ZIP code.

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Korea Becomes Second-Largest U.S. Export Market *by Judith Foulke* 4

South Korea has increased its buying of U.S. agricultural products and is now our second-largest single-country market. But Korean agriculture still benefits from a high level of government protection. This means that further U.S. inroads into the Korean market will be difficult unless these policies are relaxed.

Western Water Subsidies Under Scrutiny Again *by Jack Harrison* 7

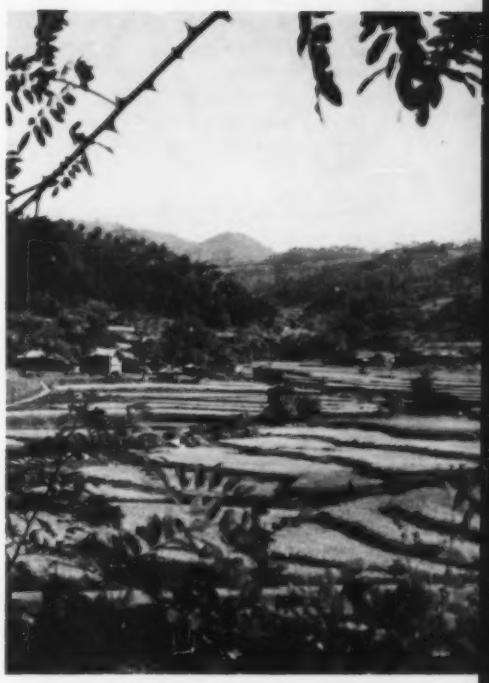
The Bureau of Reclamation program that provides irrigation water—often below cost—to many farmers in western states has been receiving close scrutiny from policymakers. Some question whether the program is consistent with other federal policies. But others say the water program is a bargain and an important reason for the successful economic development of arid regions.

Low-Input Farming Faces Profitability Issue *by Judith Foulke* 12

Debates over low-input agriculture often focus on health issues vs. economic considerations. Producers know that chemicals can boost productivity and profitability. And many are increasingly concerned about the dangers chemicals sometimes pose to farmworkers, water supplies, and foods. Finding a satisfactory middle ground is difficult.

Mandatory Controls: The Tradeoffs Can Be Costly *by Jack Harrison* 14

Mandatory controls on agricultural production might increase farm income and trim commodity surpluses, as proponents claim. But that's not the whole story. Other effects, on the negative side, could occur in such areas as consumer food costs, input industries, exports, and the livestock sector.



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This is your handy guide to winter and spring release dates for situation and outlook reports of the Economic Research Service, crop and livestock reports of the National Agricultural Statistics Service, and supply-demand estimates of the World Agricultural Outlook Board.

Korea Becomes Second-Largest U.S. Export Market

South Korea has become the second-largest single-country market for U.S. farmers, buying $2.25 billion worth of products in fiscal 1988. U.S. agricultural exports to Korea were 32 percent higher than in 1987, and are projected to increase again this year.

In 1987 Korea had been the fourth largest market—with purchases of $1.7 billion—behind the Netherlands and Canada. (Japan is first, buying $5.6 billion worth of U.S. farm products in 1987 and $7.3 billion in 1988.)

Between 1983 and 1986, the U.S. share of the Korean market fell. The United States lost some of its competitive edge because of higher prices for several commodities, including grains, cotton, and soybeans. But when U.S. prices dropped as a result of lower producer loan rates, the U.S. export market to Korea recovered. By 1987, 47 percent of Korea's total agricultural imports came from the United States.

Korea is expected to maintain its rank of second in fiscal 1989 because of increased demand for feed for its growing livestock sector, and for cotton and hides for its expanding textile and leather industries.

Production of Korean pork, poultry, and dairy products is expected to set new records in 1989. With tighter supplies of Canadian, Australian, and EC feed wheat, prospects for sales of U.S. corn are especially good. Soybean exports are also expected to remain strong despite increased prices.

Analysts attribute the increase in cotton imports to a strong export market in finished Korean textiles. In 1988, the textile industry underwent its first major expansion to meet a growing market.

Much Government Intervention

South Korea maintains a high level of government intervention in agriculture, second only to Japan among the nations of the Pacific area. Agriculture is protected by heavy subsidies, keeping consumer prices high. The government regulates domestic markets and limits or bans imports of high-value agricultural products.

Korea is buying mostly cotton, hides, and livestock feed.

Government intervention also includes subsidies for farm chemicals and machinery, irrigation projects, and rural infrastructure programs such as guidance to farmers making investments in farms and houses.

Economists in USDA's Economic Research Service measure government intervention in agriculture in producer subsidy equivalents (PSE's). A PSE is the portion of farmers' gross income that comes from government assistance. The 10-commodity PSE for Korea for 1982-86 was 60 percent, with soybeans, rice, and barley receiving the most intervention among the crops, and beef the most among the livestock.

ERS economist Al Evans says that the United States recognizes a potential for increased sales in the heavily protected Korean market. The United States has been urging the Korean government to reduce its trade barriers. Korea is slowly liberalizing its agricultural markets as it attempts to balance its own interests against foreign concerns about trade, says the economist.

In 1984, the Korean government banned imports of beef and cattle. Overinvestment and overproduction in the beef sector had caused prices to collapse. Subsequently, strong economic growth raised consumer income and led to improved diets and increasing demands for beef. Mostly because of the ban on imports, inventories of beef went down and prices went up.

In 1988, pressure from the United States, the dietary needs of the many foreigners who visited Korea for the Olympic games, and domestic beef shortages convinced the Korean government to lift its ban on beef imports despite the internal political sensitivity. But Korea did establish an import quota of 14,500 tons for the last half of 1988, of which 9,850 tons were for high-quality beef. Exporting countries are continuing to urge Korea to raise its quota on beef beyond the 35,000 to 39,000 tons planned for 1989.

In the feed sector, the government appears to be moving in the direction of allowing imports to be determined more by market forces than by quotas, say analysts. In previous years, the quotas, aimed at maximizing the use of domestic ingredients, resulted in big increases in imports of non-grain feed ingredients and items not subject to quota restrictions. The quota was relaxed somewhat in 1988, and the requirement that corn be limited to 60 percent of all feed grain imports was dropped.

Tariffs Reduced

In 1988, Korea reduced import tariffs on wheat, corn, rye, barley, oats, sorghum, soybeans, and soybean meal from 7 percent to 3 percent.

Recently, Korea also opened some of its import market to U.S. high-value agricultural products. Imports of lemons, grapefruit, cherries, and some fruit juices expanded in 1988, but the volumes were small.

As of April 1988, imports of quince, fruit cocktail, and vegetable juices were allowed. In July, avocados, meat extracts, high-protein soybean flour, and more varieties of vegetable juices were added to the list of allowed imports.

For the first time, the Korean government allowed the U.S. Commodity Credit Corporation's GSM-102 program to be used for the credit purchase of value-added intermediate products such as fur skins, leather, and wood products.

Korea is essentially self-sufficient in barley, horticultural products, and livestock products, except beef. Because rice and barley dominate agricultural production, programs pertaining to food grains have been central to Korea's farm policy.

Korea says it is able to produce all the rice it needs. But ERS economists contend that if this is true, it is only because demand is held down by high prices resulting from government policies. And even with the

high prices, consumers would likely be willing to buy more rice if it were available, the economists say.

Korea has no more land available for growing rice. The growers have cultivated the land as intensely as possible. A higher yielding hybrid variety introduced a few years ago has not won acceptance by Korean consumers, who don't like its taste.

Some imports have the same problem. California growers produce the japonica type rice, which is what the Koreans prefer. Rice farmers in the southern United States grow the indica type, which Koreans don't like as well.

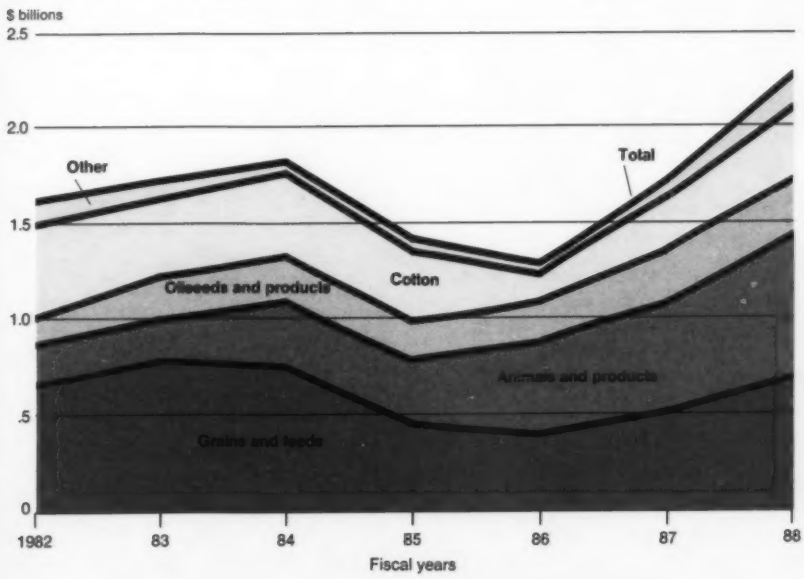
The primary intent of the grain programs is to enable the government to secure sufficient quantities from farmers to maintain an adequate supply in the domestic market. The government controls distribution and manipulates the government-held stock through purchases of grain from farmers and through imports.

ERS economist Chinkook Lee explains the history of Korea's dependence on imports and assistance. "After the Korean war, Korea desperately needed foreign assistance for both short-term food shortages and long-term economic development," he says.

"The agricultural sector, which dominated the Korean economy in the 1950's, engaging more than 65 percent of the population, was so poor and backward that agricultural supply was far short of demand. As population growth outstripped growth in food production, the demand for food grains increased and chronic food shortages emerged."

The U.S. Agency for International Development came to Korea's rescue. Between 1954 and 1973, it spent about $2 billion on assistance programs. In addition, the United States spent about $1.2 billion under Title I of the P.L. 480 program. (Title I authorizes the sale of surplus farm commodities at world market prices to developing countries that have deficits. The United States then uses the currency within the recipient country to buy goods and services or to grant or loan money back to spur economic development.) Wheat and cotton were two major commodities provided to Korea under the P.L. 480 program.

Most of the U.S. Ag Exports to Korea Are in Four Commodity Groups



Many Are Leaving Farming

Adjustments in Korea's agricultural sector included a drop in farm population. It went from more than one-third of Korea's total population 10 years ago to below one-fifth in 1986.

Korean farmers are migrating to industrialized areas where incomes are higher. Although consumers' income increased by 40 percent from 1985 to 1987, farm incomes dropped to their lowest levels in 5 years. Farm debt rose as a result of increased agricultural investment. Many farmers relied on off-farm income and support from family members living in the cities.

Korea's economic growth was 12.0 percent in 1987, the kind of growth Japan enjoyed in the 1960's, says Lee. A 27-percent increase in exports in 1987 was attributed

mostly to the automotive, electronics, and steel industries. Wages for factory workers increased almost 20 percent. Domestic consumer prices rose 5.6 percent.

Evans says that the rapid economic development which raised per capita income resulted in growing consumption of meats, milk, eggs, fresh fruits and vegetables, and processed foods. Consumption of convenience or ready-to-eat food grew as well.

Korea's agricultural exports increased to $725 million in 1987, with traditional items such as chestnuts, ginseng, tobacco, and mushrooms, combining for a third of the total.

Exports of processed food, such as instant noodles and fruit beverages, are increasing rapidly. Analysts say that, in many cases, Korea's export-oriented food processing industries depend on imports of raw materials, such as mandarin oranges and mutton.

Market Liberalization Asked

The United States and other developed countries have asked Korea to accelerate its market liberalization program, especially for beef. To American cattle producers and policymakers, says Lee, the Korean beef market offers great potential because of rapidly growing domestic consumption and high prices.

"The general U.S. perception is that the present Korean policies permit gross inefficiencies in the production and distribution of beef that could be reduced by higher levels of imports," says Lee.

The Koreans say that their agriculture is not as developed as it needs to be to stand against foreign competition. With a fifth of Korea's population still on the farm it is unlikely that the government will declare a sudden end to protectionism.

According to Lee, Korea is on the threshold of joining the ranks of developed countries.

"But arable land in Korea is limited," he says. "As the per capita income increases, imports will also. Korea is an important customer for the United States. Based on the comparative advantages of each nation, the hope is that the two will broaden bilateral commercial and agricultural trade." □

[Based on information provided by economists Al Evans of the Agriculture and Trade Analysis Division and Chinkook Lee of the Agriculture and Rural Economy Division, Economic Research Service.]

Election Benefits Korean Farmers

South Korean farmers have benefited from election year promises made good. In December 1987, for the first time in 16 years, the Korean people directly elected a president. National assembly elections were held in March and April 1988.

Analysts say that in order to consolidate its election support, the ruling party made generous purchases of several agricultural commodities, including rice, barley, soybeans, and tobacco. The government sells rice and barley to consumers at lower prices, and absorbs the difference between the purchase costs and the selling prices.

During the 1950's and much of the 1960's, the government held down prices paid to farmers as part of an effort to maintain general price stability. Since 1969, however, the prices paid to farmers have risen substantially.

During the election campaign, farm interests argued for even sharper increases in procurement prices on the grounds that factory workers had received pay increases.

In response, the government raised procurement prices for medium grain rice to five times the world market price and 14 percent over the 1986 level, even though Korea produced its seventh consecutive large rice crop.

The Korean government purchased barley at a price 10 percent higher than in 1986. The government further encouraged barley production by allowing contract producers to purchase seeds and chemicals on an interest-free basis and by providing low-interest production loans.

The Korean government raised its procurement price of soybeans 10 percent and, as a result, production expanded.

Tobacco acreage increases were authorized, along with guarantees that the government would buy all that was produced. The procurement price was raised 13 percent even though stocks on hand equaled more than 3 years' consumption.

The ruling party provided debt relief to farmers in the form of lower interest payments and longer payback times. Rural development programs, such as promoting tourism in rural areas, were stepped up, giving farmers the opportunity to earn off-farm income.

And, finally, the ruling party promised to resist U.S. requests to open markets for farm products. Beef imports were among the top concerns raised by the newly emerged opposition and farm groups.

Record-high beef consumption is creating shortages in the cattle and beef sector, says ERS economist Chinkook Lee. Cattle and beef imports will be required to reverse the downward inventory trend.

"For the present, however," says Lee, "increases in the beef import quota threaten an important but declining way of life in the rural areas."

Western Water Subsidies Under Scrutiny Again

Many farmers in the western states use government-subsidized irrigation water to grow crops for which they also receive federal assistance through commodity programs.

This "double subsidy," as it is labeled by its critics, would be ended or limited by legislation that may be introduced in Congress this year. A similar bill failed to come to a vote last year.

In 1986, farms participating in both irrigation and commodity programs received $379 million in commodity payments and an estimated $66 million worth of water subsidies, according to economists Michael Moore and Catherine McGuckin of USDA's Economic Research Service.

Critics charge that the programs often work at cross purposes. That's especially true, they say, when a farmer is receiving a payment to reduce his acreage in a surplus crop at the same time he's receiving low-cost federal water to irrigate that crop to increase yields.

Others counter that the commodity and irrigation programs have separate objectives—both worth preserving. They also argue that receiving benefits or subsidies under more than one federal program is not unique to farming.

The irrigation program is administered by the Interior Department's Bureau of Reclamation, which in 1986 provided irrigation water to 92,973 full-time farms and 57,332 part-time farms in 17 western states. In 1986, crops were harvested from more than 10 million irrigated acres served by the Bureau, with a total of more than 27 million acre-feet of water delivered. (An acre-foot is about 326,000 gallons, enough water to flood a 1-acre field with a foot of water.)

More than 60 percent of the 10 million acres irrigated with Bureau water is in vegetables, fruits, nuts, and other crops that do not have government price support programs. During 1976-85, an average of 3.8 million of the acres annually were planted in cotton, wheat, corn, and other field crops eligible for government price supports.

Receiving benefits or subsidies under more than one federal program is not unique to farming.

Of the 3.8 million acres, about 1.9 million are in the 88 Bureau projects (out of 188 total) that continue to receive reclamation water subsidies, the economists say.

The Bureau serves one-fourth of the irrigated acreage in the 17 western states, but the amount is just 2.3 percent of total U.S. cropland.

Original Purpose: Settlement

The original mission of the Bureau, as reflected in the 1902 National Reclamation Act, was to promote permanent settlement of western lands through establishment of irrigated agriculture. The Bureau has constructed 355 water storage reservoirs, 254 diversion dams, and thousands of miles of canals, tunnels, and pipelines. These facilities are used mainly for irrigation and hydroelectric power, and to a lesser extent for municipal and industrial water supplies.

The Bureau operates in six regional divisions that follow watershed boundaries of the major river systems in the 17 states. The regions are the Pacific Northwest, Mid-Pacific, Missouri Basin, Upper Colorado, Lower Colorado, and Southwest.

The contract prices that farmers pay for Bureau water average $10 per acre in the Mid-Pacific and Lower Colorado regions, $4 in the Upper Colorado and Missouri Basin regions, $3 in the Southwest, and $2 in the Pacific Northwest, according to Moore and McGuckin.

The prices vary widely from project to project within a region—from 25 cents to $40 per acre in the Mid-Pacific region and from $1 to $21 in the Upper Colorado region, for instance. The prices are based partly on the cost of furnishing the water to farmers and partly on "ability to pay," which is determined by the profitability of irrigating in different areas.

Projects in some regions are generally newer and more expensive. Therefore, their per-acre water subsidies are higher, the economists say.

In what the economists call a representative sample of Bureau projects, the subsidy rates range from 60 cents an acre in the Arnold Project in Oregon to more than $162 an acre in the Cow Creek Unit of the Central Valley Project in California.

Subsidy Defined

The Interior Department defines the irrigation subsidy as "the difference between the annual federal cost of constructing, operating, and maintaining the irrigation portion of a project, including interest on the capital investment, and the revenues received by the government toward those costs."

Contracts under which the Bureau furnishes irrigation water to farmers are usually for 40 years. Selling prices of land in Bureau water projects usually reflect the higher crop yields that result from irrigation. Therefore, the economists say, producers who have purchased land priced according to the income-producing value with current water deliveries and water charges might not be able to recover their investments if the irrigation water were no longer available below cost.

Critics say the Bureau's water program raises issues of consistency, fairness, and federal spending. They cite an inconsistency in that some USDA programs offer incentives to limit acreage, while the Bureau's water program encourages expansion of irrigated acreage and production.

Fairness, the critics say, is a factor in that producers without Bureau water often are competing with those who receive subsidized water.

Federal spending is an issue because of continuing budget deficits and government efforts to trim expenditures wherever possible.

Cotton producers received a large share of the commodity program payments to Bureau water users in the 1980-86 time

period studied by the economists, including 80 percent of the 1981 total, the economists say. Bureau projects include a considerable amount of irrigated acreage of upland cotton, and cotton also had relatively high target prices and low market prices in recent years.

Wheat, corn, and rice producers also received significant shares of the total payments during the 1980-86 period, they say. Other government program crops are barley, oats, and grain sorghum.

Development of West Cited

Some officials say the water subsidy has played an important role in the development of the western states. "The irrigation subsidy is responsible for much of the character of the western United States," an assistant secretary of the Interior, Wayne Marchant, wrote last fall.

He added:

"Without the support for development of irrigation established by Congress, much of the agricultural development in the West, especially in California, would not have occurred. Without the irrigation component, most of the reclamation projects would not have been built. These projects have provided clean power to spark industrial development in the West.

"They have added greatly to the recreational opportunities available in the West. It would not be unfair to say they have supported and continue to support the development of the majority of major metropolitan areas in the West."

Critics of the water subsidy point out, however, that not all farmers share in the benefits of the program, and in fact, some wealthy producers are receiving government assistance in the form of lower water costs.

The Interior official estimated the value of the total Bureau irrigation subsidy from 1902 through 1986 at $9.8 billion.

In analyzing the government assistance levels in Bureau water programs, the ERS economists summarized the philosophy behind various government farm programs. They note that commodity programs have at least three objectives: protecting producers from low market prices by setting a price floor for program crops, supporting farm income by setting a target price for program crops, and providing national food security by establishing commodity reserves and controlling planted acreage.

These three objectives may result in government payments to farmers. Participation in commodity programs is voluntary, and often the only requirement is compliance with land set-aside provisions.

Payment rates for the commodity programs vary by crop, from year to year. In 1984, deficiency payments were relatively low and price-support payments in some cases were zero because market prices rose above loan rates. But in 1985, a combination of depressed market prices and higher target prices resulted in higher payment rates.

Compared to the longer-term contracts of the reclamation water program, the shorter-term commodity programs would be easier to change, as a way of eliminating the double subsidy, the economists suggest.

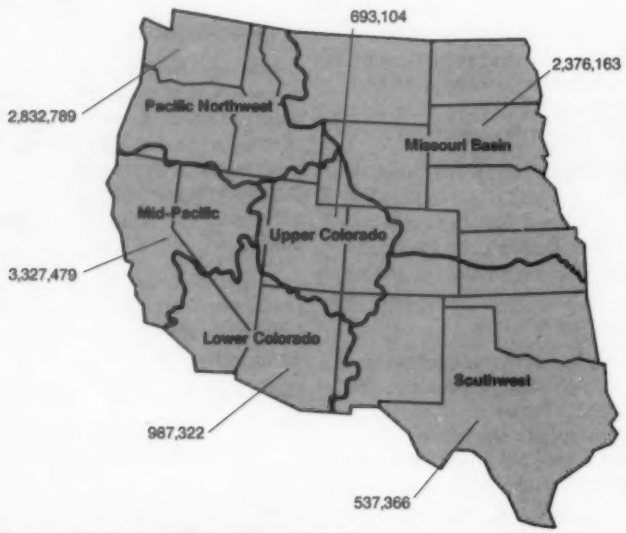
The economists note that a family, a farm, or another type of business may receive two or more federal subsidies "as incentive to achieve social objectives." For example, a family can receive several subsidies through the federal tax code, such as for home ownership, municipal bond ownership, charitable donations, and dependent children.

They also note that the 1985 farm bill was designed to provide the agricultural economy a market orientation by reducing commodity program loan rates and by freezing and then lowering target prices. And they add that the next major farm legislation is scheduled to be written in 1990. Decisions on the direction of the next farm bill could determine the importance of federal support levels as a policy issue, the economists say. □

[Based primarily on information supplied by Michael Moore and Catherine McGuckin of the Resources and Technology Division, Economic Research Service.]

The Mid-Pacific Region Has the Most Acres Irrigated With Bureau of Reclamation Water*

Acres irrigated with Bureau water:



Commodity Program Payments Totaled Nearly Six Times the Irrigation Subsidies in the Bureau of Reclamation Regions in 1986

	Commodity program payments	Irrigation subsidies
	$ million	
Pacific Northwest	66.44	9.47
Mid-Pacific	214.15	36.74
Upper Colorado	4.43	1.19
Lower Colorado	17.63	0.54
Missouri Basin	69.11	18.36
Southwest	7.49	0.20
Total	378.79	66.49

*Data for 1986. The regions follow watershed boundaries of major river systems.

REPORTS IN THE NEWS

Broiler Industry Still Growing

A broiler is more than a young chicken.

When the broiler reaches the consumer, it may be a roaster or a fryer, nuggets or chunks, boneless fillet, breaded patty, packaged parts, bucket, barbecue, a chicken dog or chicken salad, luncheon roll, pot pie, frozen dinner, chicken soup or fast food sandwich.

In 1955, Americans consumed less than 14 pounds of broiler meat per person, on average. In 1987, they consumed more than 60 pounds per person. Over the same period, U.S. output climbed from about 3.3 billion pounds of broilers (liveweight) to 21.5 billion.

In the process, broiler production has become increasingly concentrated under large national or regional firms that integrate the various stages of farm production, processing, and distribution.

In 1960, the eight largest broiler firms accounted for only 18 percent of total U.S. slaughter. By 1987, the top eight firms were slaughtering 55 percent of the nation's broilers.

The industry has benefited from its ability to price its products competitively and from consumer demand for lean meats and convenient, further-processed products. Current trends seem to favor further growth in per capita consumption.

Net returns are less predictable. Broiler firms have experienced wide swings in returns as the prices of their products and the costs of their inputs—feed particularly—fluctuated. These swings are expected to continue.

This report covers consumption and prices, production, processing, marketing, and the industry outlook. The authors also discuss the capital and staffing requirements of a modern broiler complex.

***The U.S. Broiler Industry**, by Lasley, Jones, Easterling, and Christensen. (88 pages; GPO Stock No. 001-019-00595-5; $4.50.)*

Consumers Spend More on Meats

Meats face competition not only from each other. They must also compete with an increasing variety of crop-based foods.

Overall, animal products have lost some ground to crop products in recent years, but the losers are mainly dairy foods and eggs.

The meats, in fact, have slightly increased their share of per capita food consumption (measured in pounds), as well as their share of consumer food spending. Today, red meat, poultry, and fish combined account for about 17 percent of per capita food consumption and about 30 percent of food expenditures.

Among the meats, poultry has gained market share at the expense of the red meats.

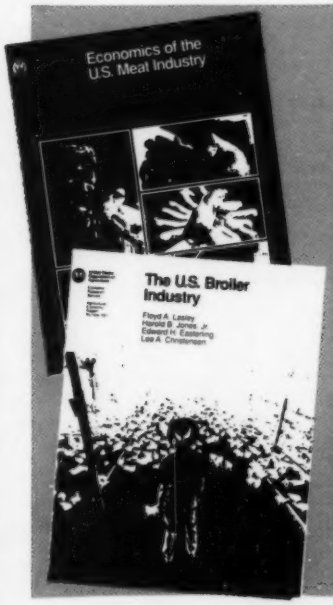
Projections based on demographic changes suggest that future growth in meat production may depend mostly on population growth. Per capita consumption of meat, at about 10 ounces per day, seems to be near the upper limit.

Demand will also be affected by continued competition from crop products, consumer concerns about fat and cholesterol, and changing consumer tastes, lifestyles, and income.

How well the individual meats perform will depend on production and distribution costs, industry structure and efficiency, and the ability of producers and processors to respond to consumer demand with competitive prices and products.

This report focuses on the economics of the meat industry and the effects of competition and public policy on supply, demand, and price.

***Economics of the U.S. Meat Industry** by Richard Crom. (112 pages; GPO Stock No. 001-019-00588-2; $5.50.)*



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1989 Reports Calendar

January-June

Titles of Situation-Outlook and other periodic reports issued by the Economic Research Service are printed in color. Summaries of reports are released at 3 p.m. ET on the dates shown. Copies of complete reports are due off press about a week later. The ***World Agricultural Supply and Demand Estimates*** *reports, issued by the World Agricultural Outlook Board, are also shown in color. These reports are issued in their entirety at 3 p.m. ET on the indicated dates. To*

JANUARY

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
2	3	4	5 Egg Products	6 Hogs & Pigs Celery Dairy Products
9 Poultry Slaughter Vegetables Vegetables, Prelim.	10	11 Crop Production	12	13 World Agricultural Supply & Demand Crop Prod., Annual; Winter Wheat & Rye Seedings; Grain Stocks; Rice Stocks
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24	25 Eggs, Chickens, & Turkeys	26	27 Peanut Stocks & Processing	28 Nat'l. Food Review[1] Poultry, Prod., & Value Agricultural Prices

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29	30	31 Cotton & Wool Agricultural Prices

[1]**National Food Review** and **World Food Needs and Availabilities** are not part of the Situation and Outlook series. [2]Reports focus on Inputs (Feb. 14) and Agricultural Land Values (April 20 and June 21).

ricultural s reports, l Outlook or. These irety at 3 ates. To

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ONESDAY	THURSDAY	FRIDAY
1	2	3 World Food Needs[1] Egg Products Catfish Production
8 icultural ncome & inance tle eep & Goats	9 World Agricultural Supply & Demand Crop Production	10 Honey Farm Labor
15 Production	16 Potato Stocks Cattle on Feed	17 Agricultural Outlook Sugar Market Statistics
22 estock & oultry	23 Exports Eggs, Chickens, & Turkeys	24 Feed Yearbook Cold Storage Livestock Slaughter

ONESDAY	THURSDAY	FRIDAY
3 ultry Slaughter	4	5 Dairy Products Dairy Products, Annual
10	11 World Agricultural Supply & Demand Crop Production	12 Livestock & Poultry Turkey Hatchery Farm Labor
17 tle on Feed	18 USSR Sugar Market Statistics	19 Agricultural Outlook Livestock Slaughter
24 icultural ncome & inance	25 Feed	26 Exports Peanut Stocks & Processing
31 ton & Wool icultural Prices		

MARCH

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20 World Agriculture Cold Storage, Annual	21 Catfish	22 Hop Stocks Vegetables	23 Eggs, Chickens, & Turkeys	24 Cold Storage Wool & Mohair Livestock Slaughter
27	28 Hatchery, Annual Peanut Stocks & Processing	29 Aquaculture	30 Agricultural Prices	31 Prospective Plantings Grain Stocks Rice Stocks Hogs & Pigs

JUNE

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5 Poultry Slaughter	6 Dairy Products	7	8 Celery	9 Vegetables Vegetables, Annual
12 World Agricultural Supply & Demand Crop Production	13 Turkey Hatchery	14	15 Sugar & Sweeteners Yearbook Western Europe	16 Tobacco Milk Production Cattle on Feed
19	20 Agricultural Outlook	21 Agricultural Resources[2] Catfish	22 Cherry Production Eggs, Chickens, & Turkeys	23 Cold Storage Livestock Slaughter
26 Vegetables	27	28 Peanut Stocks & Processing	29 Agricultural Prices Agricultural Prices, Annual	30 Grain Stocks Hogs & Pigs

Low-Input Farming Faces Profitability Issue

Tradeoffs between economic and health issues are central to many of the debates over agricultural chemicals.

The economic issue is basically that the productivity and profitability of many sectors of modern agriculture depend on the use of chemicals.

The health issues include concerns about groundwater quality, chemical residues in meat and other foods, and the exposure of farmers and farmworkers to chemicals.

Economists Stan Daberkow and Katherine Reichelderfer of USDA's Economic Research Service are studying the issues underlying attempts to satisfy both environmental concerns and farmers' efforts to maximize profits, given existing farm programs, technology, and economic conditions.

Daberkow and Reichelderfer say that the high demand for agricultural chemicals shows that farmers are motivated to maximize profits through higher yields. The higher yields are usually achieved by increased use of relatively low-cost fertilizers, pesticides, and other inputs purchased off the farm.

However, as the economists also note, there is some public pressure to reduce the use of agricultural chemicals and to encourage the use of alternative methods of production.

Case studies in the Corn Belt and the Northwest have shown that, under certain circumstances, low-input farming can generate as much profit as conventional farming. But farming methods emphasizing reduced agrichemical use are still not widespread in U.S. agriculture. On the contrary, the major trend throughout this century has been to use more purchased inputs, Daberkow says. Since 1900, total production expenses, including the cost of pesticides and fertilizers, increased from 45 percent of gross farm income to more than 80 percent.

In 1987, herbicides were used on more than 95 percent of corn and soybean acreage and 60 percent of the wheat acreage in this country. Total pesticide use in U.S. agriculture reached an estimated 820 million pounds (active ingredients) in 1986, up from 335 million in 1965.

Current rates of fertilizer use may sometimes be higher than necessary for optimum levels of plant nutrition.

The value of nitrogen fertilizer in promoting corn growth was well established by 1965, with about 75 pounds per acre of commercial nitrogen being applied to 88 percent of corn acreage. By 1987, 96 percent of corn acreage was being treated, with applications averaging 132 pounds per acre.

The aggregate use of nitrogen fertilizer on corn, soybeans, and wheat has more than doubled since 1965. About 4.6 million tons were applied on the three crops in 1965 and 10.3 million tons in 1987.

Daberkow and Reichelderfer say that evidence provided by agricultural scientists indicates that rates of fertilizer use may sometimes be higher than necessary for optimum levels of plant nutrition. Thus, chemicals currently may be overused considering the possible dangers to underground and surface water quality, food supplies, and farmworkers' health and safety.

Chemicals Cheaper Than Labor

One of the reasons for the increased chemical use is that those inputs cost less than labor and farm machinery to achieve similar results. Over the last 40 years, the costs of labor, as well as capital and land, have increased much faster than the costs of agrichemicals, say Daberkow and Reichelderfer.

Another reason agricultural chemicals are used in increasing amounts is the extra time and expertise that alternative production methods may require.

Federal commodity programs, which use past yields as a basis for determining base acreage, might have encouraged the more intense use of fertilizers and pesticides to increase yields, the economists say. But the programs that often require producers to idle a portion of their acreage in order to qualify for price supports may reduce the total load of pesticides and fertilizers used.

A lack of flexibility in cropping patterns is built into the government programs. For example, if higher prices for a nonprogram crop encourage its production in a given year, the farmer must consider the loss of base acreage in deciding whether to switch crops. The possibility of substituting soybeans for corn can create such a dilemma.

Trying To Influence Usage

Some researchers have suggested that, if chemical use is determined to be excessive, one way to encourage lower rates of use would be to impose fees or taxes on the purchase of chemicals. Given the production benefits of chemical use, a tax would have to be high to discourage their use, the economists say. Taxes would increase production costs and possibly raise commodity prices, they add.

If farm income supports could be separated from the effect that commodity programs have on the types of crops planted and the intensity of production efforts, agricultural chemical use may be reduced, say the economists. Such a change would involve discontinuation of the short-term acreage reduction programs that periodically cut the overall use of chemicals.

Finally, management, education, and information could reduce reliance on agricultural chemicals, say Daberkow and Reichelderfer. Examples include timing the use of applications, adopting more sophisticated testing of the soil and plant tissues to determine the best application rates, and monitoring pest levels more closely.

Uncertainty and imperfect information may lead to excessive use of agricultural chemicals, and could be offset by training, education, and extension of new information leading to reduced demand, say the researchers. For example, weather forecasts are valuable tools in making the best use of pesticides. Training which reduces errors in assessing pest damage could help in decisions to substitute labor and

management for pesticide use, as has been shown by pest control studies in orchards.

New technology can help reduce environmental damage and health risks. Examples include nitrogen-fixing grasses, biopesticides, improved carrier material to keep nutrients near the roots and pesticides near the pests, and crops genetically engineered to repel insects. Technological improvements could allow farmers to maintain or increase productivity, but initially could be expensive. Farmers must be convinced that new technology would ultimately increase their profits, Daberkow says.

There is little market incentive for private development of low-input systems that would reduce the use of conventional or traditional agricultural chemicals, the analysts say. However, should agrichemical inputs become more expensive or regulatory actions ban their use, the private sector would probably devote more resources to developing replacement products.

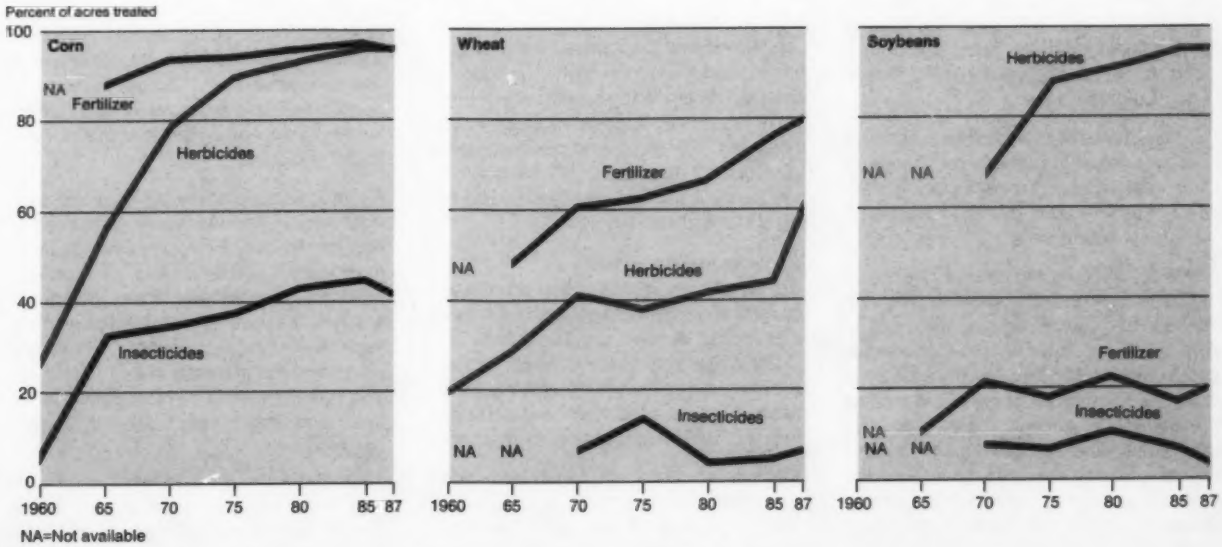
If environmental issues are to have higher priority and if greater use of low-input production methods is to be achieved, the analysts say that some form of government intervention might be necessary. But they contend that regulation and other forms of direct intervention to change price signals could be ineffective if agriculture experiences another boom in export demand and commodity prices.

Under these conditions, it would be even more difficult to achieve the goals of maintaining profits and a competitive international market position, while also improving environmental conditions. □

[Based on information provided by economists Stan Daberkow and Katherine Reichelderfer of the Resources and Technology Division, Economic Research Service.]

The aggregate use of nitrogen fertilizer on corn, soybeans, and wheat has more than doubled since 1965.

Almost All of the Corn Acreage Is Treated With Agrichemicals, and Use on Soybeans and Wheat Is Rising



NA=Not available

Mandatory Controls: The Tradeoffs Can Be Costly

Mandatory controls on agricultural production have been proposed from time to time as a policy aimed at increasing farm income and reducing government program costs.

These goals might be achieved, but not without economic tradeoffs, say economists who have analyzed various types of farm policies. Some sectors of the economy could gain from mandatory controls, but others could lose, the analysts say.

During the debate over the 1985 farm bill, policymakers took a look at mandatory production controls. They generally agreed that mandatory controls coupled with minimum price supports could boost farm income, reduce commodity surpluses, and trim farm program costs, at least initially.

However, many expressed concern over the likely negative effects on consumer food costs, input industries, exports, imports, and the livestock sector.

C. Edwin Young, an economist with USDA's Economic Research Service, led a group of analysts in a recent study of mandatory production controls. Young says that during the 1980's government spending on commodity programs reached record high levels, some crop surpluses continued to increase (although the 1988 drought reversed this trend for several commodities), and the farm sector still faced financial difficulties—of different sorts at different times.

The persistence of such problems has kept alive an interest in further examination of differing policy approaches, including mandatory production control programs (MPCP's), Young says.

An MPCP could be implemented by requiring farmers to proportionally reduce production of program crops that are in surplus. Young says previous studies have shown that an MPCP would increase net farm revenues in the short run, decrease agricultural production, raise consumer food costs, and cut government expenditures on price supports. (However, if a decision were made to try to maintain the volume of U.S. agricultural exports, government spending might remain fairly level or even increase, shifting from price supports to export subsidies.)

Some sectors of the economy could gain from mandatory controls, but others could lose.

Reducing output through mandatory controls would affect farmers differently than output reductions brought about by market forces, Young says. Under mandatory controls, the reduced level of output is shared by all farmers, regardless of how efficient they are. But if reduced output results from lower prices, the more efficient and lower-cost farmers and the more productive regions continue to produce, while higher-cost producers curtail production.

Higher average production costs under mandatory controls mean resources would not be used in the most efficient manner, and the competitiveness of U.S. agriculture in world markets would be reduced, according to the economist.

Additionally, in the long term, mandatory controls would likely lead to higher production costs even for the most efficient farmers as output entitlements are capitalized into land prices. Higher land prices and therefore higher production costs would erode the profitability of farming unless price supports were continually increased. Therefore, any income gains to farmers from mandatory controls would be temporary if price support levels did not spiral upward, Young says.

Impacts in Five Areas

An MPCP would affect the economy in several ways. The magnitude of the tradeoffs would depend on the details of a specific policy, economists say. The major effects could be divided into impacts on five areas: farmers, consumers, federal spending, agribusiness, and natural resources.

Farmers would benefit initially from higher commodity prices because of reduced supplies. Aggregate farm income would be higher, if an MPCP included subsidies to maintain export volume. If exports are not subsidized, Young says, markets for U.S. commodities would shrink and total receipts would be reduced, although net farm income could increase.

Under an MPCP covering grains, livestock production costs would rise because of higher feed prices. The profitability of livestock production would almost certainly decline, but could improve after several years, as livestock prices increased in response to reduced production.

Consumers would see food costs increase with higher crop and livestock prices. Import quotas would be needed to maintain the higher domestic commodity prices. Without such quotas, processors could buy lower-priced foreign commodities, and this would hold down U.S. prices.

Low-income households would be especially hard hit by higher food costs, the economists say, because such households spend a larger portion of their income on food. Higher food prices would increase government spending on food assistance programs, if the same nutritional level of assistance is maintained.

Federal farm program spending could be affected both positively and negatively by an MPCP, Young says. Income support programs would be eliminated, but export subsidies would be needed to maintain the competitiveness of U.S. agricultural exports. How these two factors might balance out would depend on the specifics of a particular program.

Agribusiness would encounter a decline in employment and income as farm production decreased. Fewer inputs—such as machinery, fertilizer, and pesticides—would be required. And higher food prices would cause a decrease in food purchases, especially of meat products. There could be a decrease in transportation, handling, and merchandising of farm commodities and food items, especially if exports declined.

Natural resources would be affected by an MPCP because less land would be used for farming. With proper cover, the idling of land would decrease the total amount of

erosion, maintain soil productivity, and reduce off-farm damage to rivers and lakes from chemicals and erosion. The potential for groundwater contamination could increase if farmers boosted their per-acre use of fertilizers and pesticides.

Acreage or Marketing Controls

The specific types of MPCP's examined by the analysts included acreage allotment and marketing quota programs. Price objectives used in the economic model included two basic levels: 80 percent of parity, or 1985 farm bill target prices. Provisions of the 1985 legislation not replaced by an MPCP would remain in effect. These would include the Conservation Reserve Program, Young says.

A price objective of 80 percent of parity would represent an increase of 100-130 percent over 1986 loan rates, whereas setting prices equal to 1986 target prices would amount to an increase of 55-80 percent. Young says that these price levels did not come from any specific legislative proposals, but were selected for illustrative purposes.

The research looked at results of various farm policies over a 5-year period, 1986 through 1990. An acreage allotment program designed to raise prices to 80 percent of parity, maintaining exports at 1986 levels with export subsidies, would boost net farm income by 36 percent the first year and by 58 percent or $80 billion over 5 years. Consumer food costs would increase an average of $16 billion annually over the 5-year period. Federal outlays would increase roughly $2 billion. In the first year, the amount of land used for agricultural production would decrease by 17 percent from projections based on the 1985 farm bill.

The Corn Belt and Northern Plains, where the production of crops covered by government programs is concentrated, would realize a much larger percentage of the increase in returns, Young says.

Total livestock feed expenditures would increase by 40 percent over costs under the 1985 farm bill. In the 5-year period, a decrease of 17.4 billion pounds in fed beef production would be partially offset by an increase of 10.3 billion pounds in nonfed beef production, creating a net decrease of 7.1 billion pounds in total beef production. The reduction in pork and poultry production would be 4.4 and 3.2 billion pounds, respectively. Production of milk would be reduced by more than 35 billion pounds.

Mandatory production controls on grains would increase livestock production costs because of higher feed costs.

However, as production declined, livestock prices could increase significantly, the economists say.

The drop in consumption of red meat and poultry would reduce economic activity associated with processing, transporting, and selling those meat products. Over 5 years, the shift to an acreage allotment program would result in losses to the food processing sector, the transportation sector, and the marketing sector. The total loss in economic activity to the food distribution system would be less than $2 billion.

Use of Inputs Would Fall

More intensive use of fertilizer and pesticides under an acreage allotment program would partially offset the generally lower demand for inputs resulting from production cuts. Machinery and pesticide use would decline by about 20 percent.

Federal spending on an acreage allotment MPCP would be determined by the level of intended prices and what is done about maintaining exports through subsidies. To maintain exports, subsidies of $12-$13 billion per year would be needed, the analysts say.

A marketing quota system with the same price goal—80 percent of parity—would have similar results in several areas, Young says. It could increase aggregate net farm income by 63 percent over 5 years, consumer expenditures by 4 percent, and federal spending by 12 percent. Less land (10 percent) would be idled, because there would be less incentive to increase crop yields through more intensive use of inputs. The reduction in soil erosion would be less than under an acreage allotment program.

Export subsidies raise the possibility that competitors would retaliate, which could lead to even higher government costs over time, the economists say. The costs of an export subsidy program would exceed the savings from eliminating current programs, and over the 5 years total federal costs are projected to increase by $12 billion (in either an acreage allotment or marketing quota system) over costs under the 1985 farm bill.

In a crisis such as the 1988 drought, "the conditions resulting from mandatory controls would obviously create more vulnerability, because of tighter supplies," Young says. He adds that the level of production allowed under an MPCP could be adjusted from year to year, to replenish stocks or handle other special situations. □

[Based primarily on information provided by economist C. Edwin Young of the Commodity Economics Division, Economic Research Service.]

AGRICULTURAL ROUNDUP

Export Acreage Tops 100 Million

U.S. farmers harvested 302 million acres of crops in 1987. The output from an estimated 107 million of those acres went to foreign markets as agricultural exports.

This was the largest U.S. export acreage since 1983, according to economist Jim Hauver of USDA's Economic Research Service. In 1984-86, less than 100 million acres per year was used to produce the nation's farm exports.

Hauver says that food grains, primarily wheat and rice, accounted for the biggest share—about 38 percent—of 1987's export acres. Oil crops, mostly soybeans, accounted for 28 percent. Corn and other feed grains were grown on 20 percent of the export acreage, cotton on 4 percent, and fruits, vegetables, and other crops on 7 percent.

Livestock products accounted for 3 percent of U.S. export acreage in 1987. (This does not include pasture and other land used to raise livestock and poultry, but does include land used to grow the hay and feeds that went into the production of exported animal products.)

Hauver's figures are based on two sets of USDA data: average per-acre yields for crops, and U.S. export volumes of individual commodities during the trade year immediately following the harvest.

By dividing the export volumes by the average yields of the various crops, Hauver can estimate the acreages that were needed to produce the quantities exported.

During the 1970's, the acreage equivalent of crop exports rose rapidly as U.S. agricultural export volume exploded. The record—which still stands—was set in 1980. Around 137 million acres of that year's harvested crops went to foreign markets, nearly double the 72 million of 1970.

After 1980, export acreages trended downward until 1985 and then increased again from 1985 to 1987, says Hauver. At 79 million acres, 1985's figure was the lowest since 1971.

Just as export acreage rises and falls, so does total U.S. crop acreage. The amount of land harvested changes in response to farm program requirements, farmers' planting decisions, prices, and weather.

According to Hauver, one way to measure the year-to-year importance of export acreage is to compare it with total crop acreage.

In 1985, only 23 percent of the nation's harvested acreage was used to produce crops for export, down from 39 percent in 1980. The share rebounded to 30 percent in 1986 and 35 percent in 1987. Back in 1970, export acreage accounted for about 25 percent of all harvested acres.

The peak year, by this measure, came in 1983, when the nation's harvested area dropped by 56 million acres because of drought and huge acreage reductions under the PIK (payment-in-kind) program. Compared with 1980, less land went to produce crops for export, but the export acres—estimated at 124 million—represented an unprecedented 41 percent of 1983's total harvested crop area.

It's too early to determine exactly where 1988 will rank in these statistics, says Hauver. Export acreage will be down from 1987's 107 million acres because export volume is almost certain to decline during the current trade year, based on USDA forecasts. (Export value—bolstered by higher average prices—is expected to rise, despite the reduced volume.)

As a percentage of total acres harvested, however, 1988's export area may still rank relatively high. The reason is that last year's total acreage dropped to the lowest level in this century because of drought-related crop failure and the idling of a record 78 million acres under government programs.

Hauver cannot actually begin to calculate 1988's export acreage until more trade data are available for the 1988/89 year, which doesn't end until September 30. Even then, the figure he gets, like all his previous estimates, will only be a rough approximation, he cautions.

To estimate export acreage using available data, Hauver has to assume that exports are produced on farms with average yields and that all of a given year's exports come from the preceding harvest.

Exports Accounted for an Estimated 35% of U.S. Harvested Cropland in 1987, the Largest Share Since 1983

	Total acres harvested[1]	Export acres[2]	Export share
	mil. acres		
1970	293	72	25%
1975	336	100	30%
1980	352	137	39%
1981	365	129	35%
1982	362	113	31%
1983	306	124	41%
1984	348	96	28%
1985	342	79	23%
1986	325	96	30%
1987[3]	302	107	35%

[1]Harvested U.S. crop area, plus double-cropped acreage. [2]Acreage equivalent of crops exported was estimated by dividing fiscal year U.S. export volumes of individual commodities by respective per-acre yields. [3]Based on fiscal 1988 export estimates.

Poverty Highest In Rural Areas

It's a persistent problem that is largely passed over, unrecognized, by most Americans. It is the problem of rural poverty.

"The American public generally perceives poverty as an urban problem," says economist Kenneth Deavers of USDA's Economic Research Service. "But, in actuality, the incidence of poverty is higher in rural or nonmetropolitan areas."

In 1987, the nonmetro poverty rate was 16.9 percent, more than 4 percentage points higher than the metro rate. In fact, nonmetro poverty is even high enough to be compared with central city poverty, which was 18.6 percent in 1987.

The poverty rate for the farm population was 12.6 percent in 1987, a drop of 7 percentage points from 1986. This unprecedented decline reflects, in part, improvements in the farm sector. However, demographer Calvin Beale of ERS says that part of the decline is probably a "measurement deviation." The farm poor make up less than one-tenth of the nonmetro poor.

Poverty levels are determined by matching family cash income against "thresholds" of minimum income needed to live adequately. In March of each year, the U.S. Census Bureau conducts a survey that includes statistics on individual and family income received the year before. These numbers are then compared to the "poverty thresholds," which are annually adjusted for inflation. A family of four with two children was considered poor in 1987 if its income was less than $11,519.

Deavers and ERS colleagues Robert Hoppe and Peggy Ross set out to examine recent poverty statistics. What they found is that "poverty rates have grown in the 1980's."

"The late 1960's and early 1970's brought considerable progress. The progress was interrupted by the 1973-75 recession, but the official nonmetro poverty rate still declined from 20.2 percent in 1967 to 13.5 percent in 1978," Deavers says.

Because of the severe recessions of 1980-82, poverty rates increased sharply in both metro and nonmetro areas. "By 1983, the official poverty rate reached 13.8 percent in metro areas and 18.3 percent in nonmetro areas. After 1983, metro poverty rates declined somewhat, but the nonmetro poverty rate stayed about the same until 1987," Deavers says.

Three major factors contributed to the earlier upturn.

"First, inflation was high in the late 1970's and early 1980's," he says. Because the poverty thresholds are adjusted for inflation, they also rose. This caused people whose incomes were just marginally above the poverty level to fall into poverty if their incomes grew more slowly than inflation.

Secondly, Deavers says, "economic downturns from 1980 to 1982 reduced the earnings of some people enough to make them poor. Third, tightened eligibility requirements increased poverty by removing people from the welfare rolls."

Although the last recession ended in November 1982, the current recovery seems to have had a delayed effect on the nonmetro poverty rate—reflecting recent slow income and employment growth in nonmetro areas.

"Nonmetro poverty is heavily concentrated in the South," Deavers says. The 1987 nonmetro poverty rate was 21.2 percent in the South, compared with 13.6 percent in other nonmetro areas. As of 1987, 54 percent of the nonmetro poor lived in the South, a region with only 43 percent of the total nonmetro population.

Despite these statistics, there have been some successes in combating poverty.

"Even though the overall poverty rate increased between 1973 and 1987 for both metro and nonmetro people, poverty rates among the elderly declined in both areas," says Deavers. "The elderly poverty rate in nonmetro areas was 22.5 percent in 1973 but had fallen to 15.6 percent in 1987."

He explains that "federal programs targeted at the aged are largely responsible for the substantial decline in poverty among the elderly." (Not all nonmetro elderly have benefited equally, though. Nearly 80 percent of nonmetro elderly black women living alone remained in poverty in 1987.)

These federal programs include Supplemental Security Income (SSI) and Social Security. SSI was established in 1974 to provide a nationally uniform basic federal benefit to needy elderly, disabled, or blind people. States may also supplement the basic federal benefit. Social Security benefits were increased in the late 1960's and early 1970's, and benefits are now indexed for inflation.

But the nonmetro poor still face problems with no easy solutions, says Deavers.

"The rural poor may have more limited access to services and programs than the urban poor," he reports. "Many of the areas where sizable numbers of the rural poor live are isolated and lack basic human and community facilities needed to support a minimally adequate system of service delivery."

Moreover, he says, "states with disproportionate shares of rural poor tend to be poor, particularly in the South, and are thus unable to administer and supplement welfare programs to the same extent as more prosperous states."

California Water Situation Better

After 2 years of very dry weather, California vegetable growers are concerned about an adequate supply of irrigation water in 1989.

But as 1988 was drawing to a close, winter rains boosted the supply of water in reservoirs and reduced the worries, according to economist Shannon Hamm of USDA's Economic Research Service.

Vegetable growers must have irrigation water—100 percent of the vegetable fields in California are irrigated. And California produces half the nation's vegetables (measured in both volume and value). The state produced more than $3 billion worth of fresh vegetables in 1987.

California produces 100 percent of this country's commercially grown artichokes, 97 percent of the brussels sprouts, 82 percent of the broccoli, 71 percent of the lettuce, 67 percent of the cauliflower, 63 percent of the tomatoes, and 59 percent of the celery.

The state has a lot of productive land and a generally favorable climate—except that rainfall is inadequate in most farming areas to produce the particular crops that are grown. Annual precipitation averages about 23 inches statewide. But that includes some mountainous areas in the north that receive more than 100 inches of precipitation per year, and desert in the south that gets little rainfall at all.

Much of the fertile Central Valley, where most of the crops are grown, gets less than 15 inches of rainfall annually.

Most of the precipitation in California falls during December, January, February, and March. And most of the growing of vegetables takes place during other months.

The water supply situation for California vegetable growers was studied last summer by Paige Rausser, a student at the University of California at Berkeley who worked as an ERS summer intern in Washington.

She reported that in late summer California's supply of water was 66 percent of normal. As of December 1, the figure was up to 69 percent, Hamm says. During the drought years of 1976 and 1977, the level was down to about 50 percent of normal.

The Sacramento River Index, an important measure of water availability from major storage reservoirs, is normally 19 million acre-feet annually. In 1988 it was only 9 million acre-feet. In 1977 it was 5 million acre-feet.

At the beginning of January each year, farmers are notified of their water entitlements for the calendar year. Despite the reduced supplies, agricultural water entitlements were not cut in 1987 or 1988.

"Because of the relatively high value of vegetables, producers can afford to pay more for water when necessary," Hamm says.

Farmers have had little incentive to reduce their use of irrigation water, Rausser says. "There is little self-conservation of water because the prices charged for the water are low in most areas due to the government subsidy," she says.

An average of 71 million acre-feet of water drains off California land into streams annually. About 40 percent of this is in the northwest corner of the state. Some additional water flows into the state from neighboring states.

The all-time low in annual runoff was 15 million acre-feet in 1977, and the all-time high was 135 million acre-feet in 1983, according to information from the California Water Resources Department. California's 1,313 state and federal reservoirs can hold nearly 43 million acre-feet of water. Groundwater (underground) supplies are estimated at 850 million acre-feet, but most of this is unavailable for use.

More than 16 million acre-feet of groundwater is pumped annually, mostly for agricultural and municipal uses. Groundwater pumping exceeds recharge by about 2 million acre-feet per year, the water department says.

The state's estimated total use of water in 1985 was 34.2 million acre-feet.

Water officials say that in 3 years out of 4 the water from rainfall plus snowpack melting is sufficient to provide for all usage. During the fourth year, water has to be taken out of storage (and presumably is then replaced during wetter years).

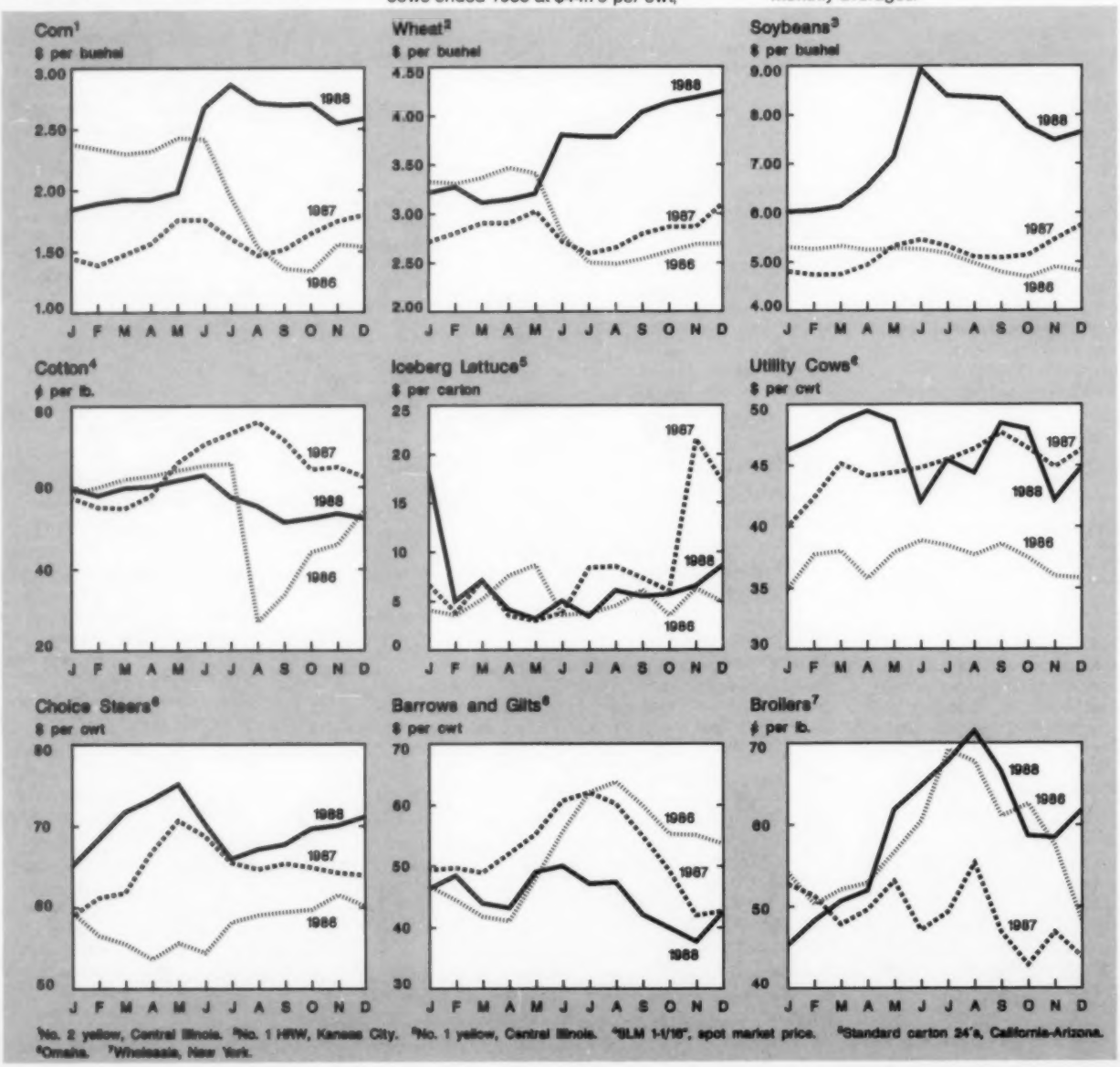
Agriculture takes about 80 percent of the state's "developed" water, Rausser says. Developed water refers to that in reservoirs and other storage systems.

Hamm says that a greater problem than total water supply for vegetable growers in California is the matter of salinity—buildup of salts in the soil as a result of irrigation. Possible solutions to this problem are being sought through research by state and federal agencies.

FARMLINE TRENDS

Monthly Price Monitor

USDA's December 1988 index of farm prices was up 14% from Dec. 1987's index. Corn ended the year at $2.58 per bushel, compared with $1.79 at the end of 1987. Wheat reached $4.24, its highest price since April 1982 and sharply above Dec. 1987's $3.10. At $7.63, soybeans topped the previous year's price by nearly $2. Cotton, at 52.2¢ a lb., was down 10¢ from Dec. 1987, and iceberg lettuce prices were off 50%. Among meat animals, utility cows ended 1988 at $44.79 per cwt, compared with $46.31 in Dec. 1987. Choice steers did better—$71.07, up more than $7 from a year-earlier. Barrows and gilts, at $42.41, were nearly even with their Dec. 1987 price, while broilers were up 18¢ a pound to 61.7¢. All prices shown are monthly averages.

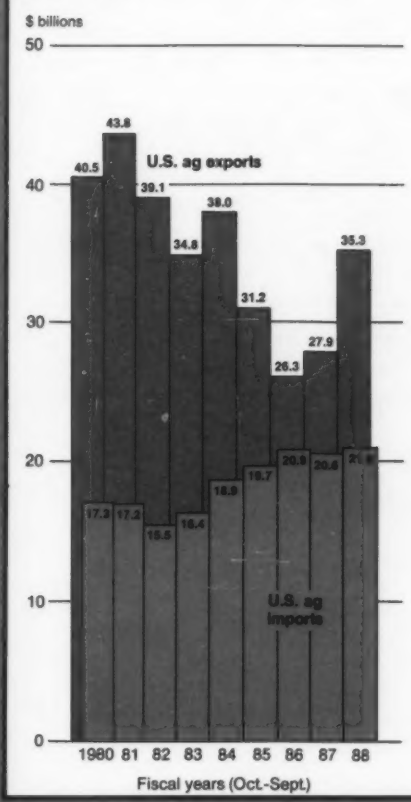


[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]ILM 1-1/16", spot market price. [5]Standard carton 24's, California-Arizona. [6]Omaha. [7]Wholesale, New York.

U.S. Agricultural Exports Rose Sharply in Fiscal 1988

Data were provided by economist Stephen MacDonald of the Commodity Economics Division, Economic Research Service

Export Value Topped $35 Billion, and the U.S. Ag Trade Surplus Exceeded $14 Billion—Our Largest Surplus Since Fiscal 1984



Western Europe Was the Largest Regional Market for U.S. Ag Exports

	FY88 U.S. ag exports by region
	$ millions
Western Europe	8,029
Japan	7,274
Other Asia[1]	6,751
Latin America	4,401
Africa & Mideast	4,175
USSR & East Europe	2,493
Canada & Oceania[2]	2,211
Total	**35,334**

Latin America Was the Largest Supplier of U.S. Ag Imports

	FY88 U.S. ag imports by region
	$ millions
Latin America	7,482
Western Europe	4,441
Canada & Oceania[2]	4,342
Other Asia[1]	3,012
Africa & Mideast	1,154
USSR & East Europe	340
Japan	239
Total	**21,010**

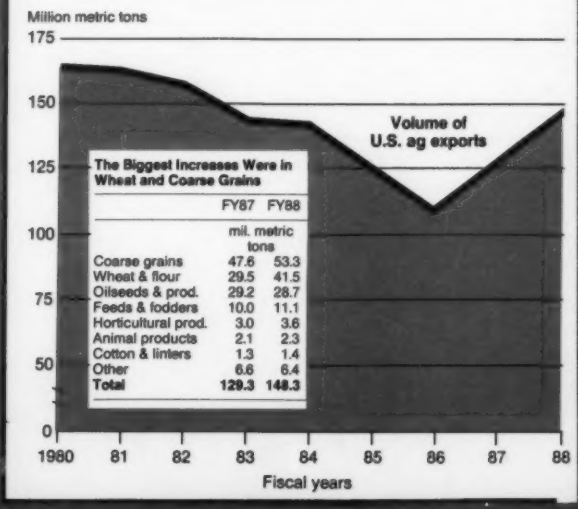
And the United States Recorded an Ag Trade Surplus with Most Regions

	FY88 U.S. ag trade balance by region
	$ millions
Japan	7,035
Other Asia[1]	3,739
Western Europe	3,588
Africa & Mideast	3,021
USSR & East Europe	2,153
Canada & Oceania[2]	-2,131
Latin America	-3,081
Total	**14,324**

[1]Excludes Japan. [2]Oceania includes Australia, New Zealand, and other Pacific Islands.

Though Still Below Past Peaks, U.S. Export Value to Most Regions Has Recovered Strongly from the Lows of Fiscal 1986

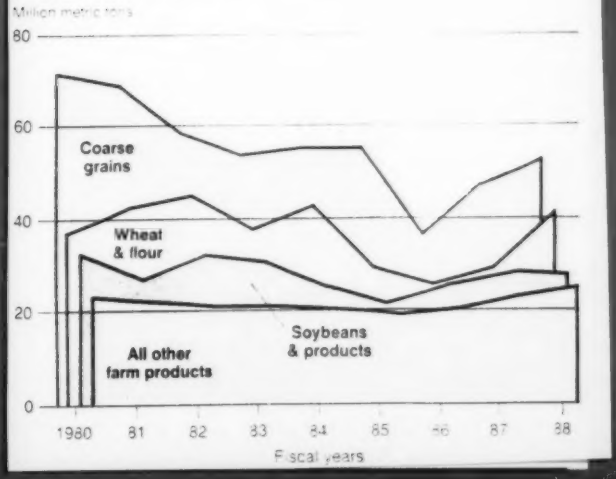
U.S. Ag Export Volume Last Year Reached Its Highest Level Since Fiscal 1982



The Biggest Increases Were in Wheat and Coarse Grains

	FY87	FY88
	mil. metric tons	
Coarse grains	47.6	53.3
Wheat & flour	29.5	41.5
Oilseeds & prod.	29.2	28.7
Feeds & fodders	10.0	11.1
Horticultural prod.	3.0	3.6
Animal products	2.1	2.3
Cotton & linters	1.3	1.4
Other	6.6	6.4
Total	**129.3**	**148.3**

From 1986 to 1988, U.S. Coarse Grain Exports Climbed 17 Million Tons, and Wheat Volume Rose 15 Million Tons



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